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PLANTAE MEXICANAE VI

BY
RICHARD EVANS SCHULTES

NEW AND SIGNIFICANT SPECIES OF SAURAUIA FROM NORTHEASTERN OAXACA

DURING the course of botanical and ethnobotanical investigations in northeastern Oaxaca, Mexico, the writer had an opportunity to study in the field and to collect specimens of several species of the perplexing dilleniaceous genus, *Saurauia*. In the present paper, three species are discussed from the point of view of their botanical and ethnobotanical interest; one of them represents a new species which is herein described.

Saurauia aspera *Turczaninov* in Bull. Soc. Nat. Moscou 31 (1858) 242.

MEXICO: Oaxaca, District of Choapam, partially cleared field near the town of San Juan Lalana, long. 95°45′, lat. 17°25′, altitude 600 m., May 13, 1939, *Schultes 490* (TOPOTYPE) Herb. Gray.

Although it is very scantily represented in herbaria, *Saurauia aspera* is the commonest and most abundant species of the genus in the northeastern districts of Oaxaca at altitudes between 500 and 1500 meters. Because of its economic value to the natives, it is spared when forests are cut down to provide new *milpas*; as a consequence, it often appears in gardens and around towns in abundance.

Saurauia aspera differs from many of the other Oaxacan species of the genus in exhibiting a definite predilection for sunny exposures. Although it is found to some extent in the forests, the tree is most abundant and apparently thrives better and grows larger when exposed to direct sunlight. It is one of the most characteristic of the heliophiles of the region and is usually seen in association with the orchidaceous *Epidendrum radicans* Pavon ex Lindl. and *Sobralia macrantha* Lindl., the gentianaceous *Chelonanthus alatus* (Aubl.) Pulle and *Lisianthus nigrescens* Schlecht. & Cham., and other notable sun-lovers.

The size of *Saurauia aspera* is variable. The collection which is cited above (consisting of more than 100 specimens and 100 wood samples) was made from a small tree growing in a sunny field. The tree is only about twenty or twenty-five feet tall, but its branches are very wide-spreading. The trunk measures ten inches in diameter one foot from the ground. The bark is soft, light greyish-brown. The wood is soft, white and coarse. This species is easily recognized by the extremely wide-spreading branches and the large number of showy inflorescences which bear a profusion of conspicuous, sweet-scented, white flowers.

Misinterpretation of the data supplied on the labels of some of the older collections led Buscalioni, who monographed the American species of *Saurauia* (Malpighia 27 (1916) 297), to present a very confused picture of the distribution of *Saurauia aspera*. In view of this, a few facts concerning the distribution of *Saurauia aspera* and its botanical history may be of interest. *Saurauia aspera* is apparently endemic to the northeastern part of the state of Oaxaca and the adjacent border of Vera Cruz. In northeastern Oaxaca, it is abundant in the Districts of Choapam, Villa Alta, Ixtlán, Cuicatlán, and Teotitlán.

In 1839, Galeotti collected the type of *Saurauia aspera (Galeotti 7325)* in San Juan Lalana, the locality of *Schultes 490*. Four specimens of this Galeotti collection were examined by Buscalioni and cited in his monograph (l.c. 297); he indicated, with reservation, that "Lalana" was in Oaxaca.

In the same year (1839), Jürgensen collected *Saurauia aspera* in the mountains of San Pedro Nolasco near Talea de Castro, District of Villa Alta, long. 96°15′, lat. 17° 26′. Buscalioni (l.c. 389) was unable to discover this locality on the standard maps of Oaxaca; he noted, however, that in the Gulf of California there was an island by the name *San Pedro Nolasco* and he suggested that the Jürgensen collection was made on this desert island. This locality in the Gulf of California is many hundreds of miles from Oaxaca; *Saurauia* is not represented in the dry northwestern parts of Mexico; and Jürgensen never visited this region. Consequently, the suggestion that the Jürgensen collection was made on an island in the Gulf of California should never have been advanced. Fortunately for scientific accuracy, Standley (Contrib. U.S. Nat. Herb. 23 (1923) 817) ignored Buscalioni's erroneous suggestion and stated that *Saurauia aspera* was "known only from Oaxaca, the type locality".

The fruits of *Saurauia aspera* are very sweet and mucilaginous and are utilized as food by all the Indian tribes of northeastern Oaxaca. They are eaten fresh or are cooked. They are also dried and kept for later use. A decoction is made from the fruits, and it is said by the natives to be an effective emollient because of the quantity of mucilage which is extracted. This decoction is administered for coughs, colds and throat irritations.

In northeastern Oaxaca, *Saurauia aspera* is known by the following Spanish names: *mameyito* ("little mamey"); *palo de moca* ("sticky tree"); *pipicho*. Among the In-

dians, it is known by the following names: Chinantec: *ma-do-tza*; Mazatec: *shka-ya-no*; Mije: *mokepi* and *shray-tsi*; Zapotec: *ya-ga-tse-go*.

Saurauia Conzattii *Buscalioni* in Malpighia 25 (1913) 403, t. 6, fig. 9.

Mexico: Oaxaca, District of Cuicatlán, San Juan Zautla, long. 96° 40′, lat. 17°58′, June 16-22, 1898, *V. Gonzales & C. Conzatti s.n.*; District of Ixtlán, Cerro Hueso, between San Pedro Yolox and San Juan Tepetotutla, long. 96°25′, lat. 17°48′, altitude 2500 m., June 26, 1939, *Schultes 695* (Econ. Herb. Oakes Ames; Herb. Gray).

Hitherto, *Saurauia Conzattii* has been known in herbaria by two collections: the type, represented by *H. & C. Conzatti s.n.* (discussed below); and the collection by Gonzalez and Conzatti (cited above), a specimen of which is preserved in the Gray Herbarium. *Schultes 695* was collected only a few miles southeast of the locality of these other collections. The plant apparently represents a very restricted endemic, because it has never been found anywhere except in the District of Cuicatlán and the northern part of the adjacent District of Ixtlán in northeastern Oaxaca, where it inhabits the highest parts of the local mountains.

Saurauia Conzattii is a forest-dwelling shrub up to five or six feet in height. It has leaves which are extremely large in relation to its height. Conspicuous because of its profusion of white flowers which measure 2.5 cm. across, it is at once distinguishable in the dark, wet forests of the limestone mountains. The slender branches and dark green leaves are very densely clothed with reddish brown setae. *Saurauia Conzattii* is not abundant where it occurs. *Schultes 695* was collected from a single isolated colony consisting of six shrubs. No other colonies were seen.

In the original description of *Saurauia Conzattii*, Bus-

calioni cited only the type collection. His manner of citation (with erroneous spelling of locality names), however, is very misleading and might suggest that he had seen several collections: ". . . Cerro della Raya, a Cujacuemalco, a Chinaulta e a Curicateca. . .". The correct data for this collection, as ascertained from herbarium labels as well as from Professor Conzatti personally, is: "*H. and C. Conzatti*, June 24, 1909, Cerro La Raya, Cuyamecalco, Chinantla-cuicateca, District of Cuicatlán, alt. 2800 m.". Because this locality is not marked on standard maps, it may be helpful to add to this data the longitude and latitude of Cerro La Raya, which is long. 96°48′, lat. 17°57′.

Although apparently an extremely rare shrub, *Saurauia Conzattii* fruits very abundantly, and, in consequence, the Chinantec and Cuicatec Indians, who value its fruit as food, visit the localities where it grows during its fruiting season. These Indians report that the fruit is very sweet and mucilaginous. No medicinal use is made of this species. The Chinantecs know the shrub as *mado-chay*. The local Spanish names are: *mameyito* and *pipichito*.

Saurauia speluncicola *R. E. Schultes sp. nov.*

Frutex magnus, saepissime pendulus. Rami setoso-pilosi. Foliorum lamina coriacea, obovata, breviter acuminata, basi cuneata, maxima pro parte integra sed apice leviter inaequaliterque undulata, margine setis ornata; lamina supra atroviridis, scabra, setis fuscis sparse obsessa; lamina infra cana, velutina, densissime stellato-pilosa albis cum pilis, et sparsissime cum setis fuscis obsessa. Inflorescentia saepissime foliis multo brevior; pedunculus setoso-pilosus; bracteae setoso-pilosae, lineares. Flores aliquid numerosi. Sepala quinque; sepala interiora tres, lutea, orbicularia, inflexis cum marginibus

EXPLANATION OF THE ILLUSTRATION

SAURAUIA SPELUNCICOLA *R. E. Schultes*. 1, leaves and inflorescences natural size. 2, flower, magnified three times. 3, petal, magnified six times. 4, outer sepal, magnified six times. 5, inner sepal (interior), magnified six times. 6, inner sepal (exterior), magnified six times.

Drawn by RICHARD EVANS SCHULTES

SAURAUIA

speluncicola R.E.Schultes





puberulenta, extus cum setarum robustarum carina media prominenti; sepala exteriora duo, viridi-aurea, triangulari-elliptica, obtusa, extus crasse pubescentia, intus puberula. Petala quinque, fere usque ad basim libera, subquadrangulata, glabra, alba. Stamina viginti duo. Ovarium globosum, glabrum, quinque cum stylibus carnosis. Fructus ignotus.

A large shrub, usually hanging, with stout branches. Branches brownish setose-pilose, the closely appressed setae up to 5 mm. long. Leaf blades coriaceous, obovate, short-acuminate, cuneate at the base, entire except for a slight, uneven undulation near the apex, the margin armed with bristles up to 0.5 mm. long. Upper surface of the leaf dark green, scabrous, minutely papillose, sparsely beset with brown setae which are about 2.5 mm. long, rather densely brown-setose along the nerves, the setae about 5 mm. long; lower surface grey, velvety, very densely stellate-pilose with whitish hairs, very sparsely beset with brown setae, rather densely brown-setose along the nerves. Petioles setose-pilose, 3.5–5 cm. long. Peduncle and inflorescence 21–27 cm. long, usually much shorter than the leaves; peduncle setose-pilose; pedicels strong, setose-pilose, 5 mm. long; bracts setose-pilose, linear, about 5 mm. long; inflorescence 5–8 cm. long, about 5–7 cm. broad. Flowers rather numerous, 1.5 cm. or less in diameter. Sepals five; the inner sepals three, yellow, orbicular, with inrolled margins, 6 mm. long, 5 mm. wide, puberulent, externally with a prominent central keel of strong bristles, each 2 mm. long; outer sepals two, greenish-yellow, triangular-elliptical, obtuse, 6 mm. long, 4 mm. wide, coarsely pubescent externally, puberulent internally. Petals five, free almost to the base, subquadrangulate, 8 mm. long, 6 mm. wide, glabrous, white. Stamens twenty-two; anthers 3 mm. long, versatile; filaments 3 mm. long, adherent to the

base of the corolla, setose-barbate at the base. Ovary globose, glabrous, 5-celled, surmounted by five short, fleshy styles. Fruit unknown.

MEXICO: Hanging from limestone rocks, western end of the barranca Nin-du-da-gé, San Antonio Eloxochitlán, long. 96°45′, lat. 18°12′, District of Teotitlán, Oaxaca, altitude 1100 m., July 6, 1939, *Richard Evans Schultes 795* (TYPE and habit photograph in Herb. Gray; ISOTYPE and habit photograph in Econ. Herb. Oakes Ames and in Herb. Schultes; WOOD SAMPLES from TYPE in Wood Collection, Biol. Lab., Harvard Univ.); same locality, July 24, 1938, *Schultes & Reko 235* (TOPOTYPE in Econ. Herb. Oakes Ames, Bot. Museum Harvard Univ. and in Herb. Gray).

Saurauia speluncicola is a very beautiful species inhabiting the shaded, damp hollows which are formed by the overhanging crags of a deep gorge or *barranca*. The shrub usually has a hanging or partly hanging habit with its strong roots inserted in cracks in the limestone walls of the hollows. In some places, the leaves are exposed to the continual dripping of lime water which seeps through the walls.

The specific epithet—*speluncicola*—refers to the peculiar habitat of the plant and means "growing in hollows".

This species represents not only a very local endemic but also an extremely rare plant. I collected in the District of Teotitlán in 1938 and 1939 and devoted many hours to the region around San Antonio Eloxochitlán. Although I searched carefully for other stations for *Saurauia speluncicola*, I was unable to find it growing anywhere except in the *barranca* Nin-du-da-gé, the type locality. In this *barranca*, furthermore, the species grows in isolated colonies and is not abundant.

If one uses Standley's key to the Mexican species of *Saurauia* (Contrib. U.S. Nat. Herb. 23 (1923) 814-815), the two collections (*Schultes 795* and *Schultes & Reko*

235) key out close to *Saurauia Radlkoferi* Busc. Although I have not seen the type of *S. Radlkoferi* (the precise locality of which is unknown), a careful examination of the description and the figure of it indicates that no close relationship exists between *S. Radlkoferi* and *S. speluncicola*. It is true that the indument of the under surface of the leaf of both species is finely stellate-pilose, but the two are readily differentiated by conspicuous floral and vegetative characters.

Saurauia speluncicola appears to be related to several other species of northeastern Oaxaca, but the degree of relationship is not clear because of the lack of sufficient comparative material. In a number of respects, *S. speluncicola* agrees with *S. Conzattii* Busc., *S. aspera* Turcz. and *S. villosa* DC., but it is unmistakably distinct from these three allies. It differs from all of them in a number of minor characters and can be distinguished from *S. Conzattii* and *S. aspera* immediately because of the stellate-pilosity on the under surface of its leaf.

In the District of Teotitlán, the Mazatec Indians use the sweet, mucilaginous fruits of *Saurauia speluncicola* as food. The plant is said to fruit very heavily. The fruits are eaten fresh or are cooked. No medicinal use is made of this species of *Saurauia* among the Mazatecs. *Saurauia speluncicola* is called by the Mazatecs *shka-yano*, the same name by which they refer to *Saurauia aspera*; the fruits of *Saurauia speluncicola* are called *to-no*. The plant is known among the Spanish-speaking natives as *mameyito* and *pipicho*.

A NOTEWORTHY COLLECTION OF ANDIRA GALEOTTIANA

BY

RICHARD EVANS SCHULTES

Among other plants recently sent from the Botanical Museum to Dr. Paul C. Standley for study, there was a specimen of the rare *Andira Galeottiana* belonging to the Leguminosae.

Andira Galeottiana *Standley* in Contrib. U.S. Nat. Herb. 20 (1919) 217.

MEXICO: Oaxaca, District of Choapam, San Juan Lalana, long. 95° 45′, lat. 17°25′, alt. 600 m., May 10, 1939, *Schultes & Reko 852* (Econ. Herb. Oakes Ames No. 3930; Herb. Gray; Herb. Field Mus. Nat. Hist.).

The type of *Andira Galeottiana*, an endemic of the District of Choapam (Oaxaca) and adjacent parts of Vera Cruz, was collected in Catemaco, Vera Cruz *(Nelson 424)*. A second collection was cited in the type description as "collected at Lalana (Chinantla) Puebla, July, 1844, by H. Galeotti (no. 3464)". This citation should be corrected to read: "Lalana (Chinantla), *Oaxaca* . . ." *Andira Galeottiana* has not been collected in Puebla so far as herbarium records indicate.

Schultes & Reko 852 was collected in San Juan Lalana, the same village where Galeotti, nearly a century ago, found the cotype. It is apparently the third collection of this tree.

In Lalana, *Andira Galeottiana* is called by the Chinantec name *mo-dzaw* and by the Zapotec name *gia-bia*. In 1844, Galeotti recorded the Spanish vernacular name as *macayo*, and in 1939, Reko and I found the same name still in use for this plant. The species is abundant in Lalana where its profusion of rose-purple panicles is very conspicuous on the hillsides in May and June.

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page 5, line 30
for distyostelic read dictyostelic
page 13, line 6
for Numerous read Numbers
page 52, line 31
for 13 read 18
page 52, line 32
for S. Richard & Galeotti in Ann. Sci. Nat., ser. 3, 3 (1845) 24, read "A. Rich. & Gal." ex Reichenbach filius in Bot. Zeit. 10 (1852) 766
page 94, line 1
for Arzneigewachse read Arzneigewächse
page 103, line 3
for specimen read spécimen
page 103, line 21
for Arzneigewachse read Arzneigewächse
page 105, line 22
for Arzneigewachse read Arzneigewächse
page 123, line 31
insert] after question
page 135, line 25
for *Hexapetion* read *Hexopetion*
page 137, line 22
for lat. 17°58′ read lat. 17°25′
page 139, line 34
for is read in
page 147, lines 26 and 27
for Hooker read Hooker filius
page 148, line 24
for Serie read Series
page 157, line 19
for Synonomy read Synonymy
page 193, line 11
for this read these
page 193, line 34
for tres read tria
page 194, correction slip, line 5
for data is read data are